

LESSON FOR WEEK FIVE (5) ENDING 10TH OCT, 2025.

SUBJECT: AGRICULTURAL SCIENCE.
TOPIC: ANIMAL IMPROVEMENT
CLASS SS3
DATE: 6TH OCTOBER, 2025

Animal improvement is defined as the process of transferring an inherited superior trait or character from one animal to another of the same species. It is also referred to as the conscious attempt by man to improve and produce better breeds of farm animals to satisfy human needs.

AIMS OF ANIMAL IMPROVEMENT

1. To produce animals that can give high meat, milk, egg, quality.
2. To produce animals that can give a high number of offspring at a time, e.g. sows, rabbits, etc.
3. To produce animals that can give high quality product such as lean carcass or meat in pig, yolk size and shell thickness in poultry
4. To develop animals with an increased ability to withstand adverse environmental conditions such as extreme heat, cold and drought.
5. To develop animals that are resistance to pest and diseases
6. To produce early maturing breeds of animals
7. To produce animals with high growth rate.

METHOD OF ANIMAL IMPROVEMENT

- A) **Introduction:** This involves the transfer or movement of animals from its country or Centre of origin to another country or region where it can adapt. It can be by physical importation either of the animals themselves or their spermatozoa. The introduced animals are usually quarantined and passed through a disease free test before bringing them into the country. The introduced animals are expected to be superior in trait like growth rate, milk yield, egg yield, pests and disease resistance than the local breeds.

ADVANTAGES OF INTRODUCTION

1. It increases the population of a desirable breeds
2. Animals newly introduced will produce more than the local breeds.
3. It makes available those breeds that are lacking in the needed environment, etc.

DISADVANTAGES OF INTRODUCTION

1. There could be severe losses in transit
2. The animals may be susceptible to certain local diseases and pests.
3. The performance of the animals in terms of quality and quantity may reduce with time, etc.

- B) **Selection:** In selection, individual animals with certain desirable characteristics are selected for reproduction, so that high quality breeding stock is obtained. Animals with desirable traits like litter size, early maturity, feed efficiency, hardness, resistance to pests and diseases, etc are selected

TYPES OF SELECTION

1. **Natural selection:** This is the ability of individual animals to weather through the unfavorable environmental forces to survive and to reproduce. Those that are not able to withstand the environmental forces will definitely die off.
2. **Artificial selection:** This is done by man using his influence to select and mate animals in order to increase the proportion of animals with certain desirable traits.
Types of artificial selection
 1. **Mass selection:** This is based on the individual merit of each animal on the assumption that the phenotype of an individual is an indication of the breeding wealth of the individual. Animals with the desirable traits are chosen.
 2. **Progeny/offspring selection:** Animals are selected on the bases of the performance of their offspring or progeny.
 3. **Pedigree selection:** Animals are selected based on the performance of their ancestors.it is belief that the animals selected is likely perform equally or even better than their ancestors.
 4. **Family selection:** Animals are selected based on the performance of their family.

ADVANTAGES OF SELECTION

1. It reduces the spread of pests and diseases
2. Only animals from the best breed are distributed.
3. Animals with undesirable traits are detected and rejected
4. It helps to identify the productive capacity of the animals etc.

DISADVANTAGES OF SELECTION

1. Selection is tedious and time- consuming
2. It requires expert which may not be readily available
3. Selection is only based on the phenotypic appearance. Genetic traits are not considered
4. It brings about elimination or exclusion of some traits of the same parent stock.

BREEDING

Breeding involves the development of animals by transferring inherited qualities from parents to offspring. This is achieved through mating.

TYPES OR METHODS OF BREEDING

1. In- breeding
2. Out-breeding
3. Line-breeding
4. Cross-breeding

In-breeding: This involves the mating of closely related individual animals to retain certain desirable characteristics for example brother mating sister or parents mating offspring. It occurs within a small population.

ADVANTAGES OF IN-BREEDING.

1. It is used to preserve and concentrate on specific qualities desired in an animal.
2. It makes it possible to achieve pure breed or pure-line after about ten or twelve generations etc.

DISADVANTAGES OF IN-BREEDING

1. Continuation of in-breeding for a long time results in depression or loss of vigour and performance.
2. Some of the signs of in-breeding include a drop in milk yield, slow growth rate and loss in fertility.

Out-breeding: This is the mating of unrelated individual animals within the same breed. An example is mating between second cousins. With this, the performance of the offspring will be better than the average of the parent.

Line – breeding: This is the mating of individuals that are not more closely related than half brothers and half-sisters. The characters obtained as a result of line-breeding are of agricultural importance. This is usually obtained after about ten or twelve generations of in-breeding and this is of high quality.

Cross-breeding: Is the mating of unrelated individuals of different breeds to produce offspring which will combine characteristics from both parents. An example is mating between N'dama and Muturu cattle. It gives rise to offspring of more vigour and vitality than the parents. Offspring grow more rapidly and more economical to rear. Offspring that can withstand variation of environment are evolved.

ADVANTAGES OF BREEDING.

1. The crossing or mating of superior animal from different breeds produces an offspring that is superior to the average of either parent. This is called hybrid vigour.
2. Offspring grows more rapidly and more economical to rear.
3. Offspring produced can withstand variations within the environment
4. It helps to concentrate and preserve specific qualities in an animal

DISADVANTAGES OF BREEDING

1. It may result in in-breeding depression, i.e. reduction in vigour and performance.
2. It may result in poor resistance to diseases.
3. It can also lead to a drop in production, such as milk, egg, meat, slow growth rate, loss of fertility.

EVALUATION

What is animal improvement.

1. State five aims of animal improvement.
2. Explain introduction.
3. List the types of selection and discuss them.
4. Define breeding
5. List the types of breeding.